

CLAIMS

1. A system for broadcasting information over a television distribution network comprising:

a) a network headend for accessing information from one or more sources, and
5 broadcasting said information;
b) a plurality of downstream channels interfaced to said headend for transmitting said information; and
c) a plurality of terminal devices for receiving said downstream channels, each said terminal device including:

1) a tuner for receiving and selecting said downstream channels; and
2) a terminal processor for receiving channel selection and information requests
from a user, and instructing said tuner to select one of said downstream channels, said
terminal processor including programming for receiving an information request from a
user, and in response thereto, instructing said tuner to select one of said downstream
15 channels on which said requested information is being transmitted from said headend.

2. The system of claim 1, wherein said terminal device further includes a memory
containing a channel mapping database for identifying, for each of a plurality of possible
information requests received from a user, a one of said channels on which said requested
20 information is being transmitted from said headend.

3. The system of claim 2, wherein said headend further includes at least a first
multiplexer for multiplexing a plurality of information data streams on one of said downstream

channels, each of said information data streams containing information identified by a corresponding one of said plurality of information requests; and said channel mapping database further includes timing information identifying a time slot in a multiple time slot sequence when each of said information data streams is to be transmitted.

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4. The system of claim 3, wherein said terminal processor is further programmed to identify from said channel mapping database, a time at which said one of said information data streams containing said requested information is to be transmitted on said one of said downstream channels, and for instructing said tuner to select said one of said downstream channels at said time.

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5. The system of claim 2, wherein said terminal device further includes a memory for storing said information data streams, and a display manager for formatting said information for display on a video monitor interfaced to said terminal device.

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6. The system of claim 5, wherein said display manager further includes a picture-in-picture application for simultaneously displaying first information stored in said memory, and second information being received on one of said downstream channels.

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7. The system of claim 1, wherein said headend further includes an encoder for digitally encoding information data streams to be broadcast and said terminal device further includes a decoder for decoding said information data streams, said encoder being programmed to generate

a full image frame periodically to facilitate synchronization of said decoder with said encoded data stream.

8. The system of claim 1, wherein said requested information comprises Internet web page data, said web page having content that is related to a video program that is being received by said tuner at a time that said information request is received by said terminal processor.

9. The system of claim 1, further including an input device for entering information requests into said terminal processor either through actuation of a button on said input device, or selection of an on-screen button displayed on a video image.

10. A terminal device for receiving information transmitted on a plurality of downstream channels in a television distribution system, and formatting said information for display on a video display device, said terminal device comprising:

a) a tuner for receiving and selecting said downstream channels;

b) a memory for storing channel mapping and information request identification information; and

c) a processor for receiving an information request from a user, said processor being programmed, in response to receipt of said information request, to access said memory to identify first information specified by said request, determine a first of said channels on which said first information is to be transmitted, and cause said tuner to select said first of said channels to receive said first information.

11. The terminal device of claim 10, wherein said processor is further programmed to download said first information into a cache in said memory, and then instruct said tuner to select a second of said channels that is transmitting second information that was being received when said information request for said first information was received by said processor.

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12. The terminal device of claim 11, further comprising a display manager for formatting first images corresponding to said first information stored in said memory and second images corresponding to said second information in a picture-in-picture format for simultaneous display on a display device interfaced to said terminal device.

13. The terminal device of claim 10, wherein said channel mapping database contains information that maps each of a plurality of possible information requests to one of said downstream channels on which corresponding information is to be transmitted.

14. The terminal device of claim 13, wherein said channel mapping database further includes time slot information identifying a time slot in a multiplexed data stream in which information corresponding to each information request is to be transmitted.

15. The terminal device of claim 14, wherein said processor is further programmed to instruct said tuner to select said first channel just prior to transmission on said first channel of said first information in said multiplexed data stream.

16. The terminal device of claim 10, further including a second tuner for downloading channel mapping and information request identification information into said channel mapping database.

5 17. The terminal device of claim 10, wherein said device is a set top converter box for receiving a plurality of cable television channels.

18. The terminal device of claim 17, wherein said information request comprises a request for Internet-based information that is related to a content of a video program that is being
10 received by said tuner when said information request for information is received by said processor.

19. The terminal device of claim 10, wherein said information request comprises a request for information selected from the group comprising Internet-based information, program
15 guide information and user account information.

20. The terminal display device of claim 10, further including a wireless receiver for receiving information requests from a wireless input device.

20 21. A method for requesting and receiving information in a television distribution network comprising:

a) providing a network headend for accessing information from one or more sources, and broadcasting said information;

b) providing a plurality of downstream channels interfaced to said headend for transmitting said information;

c) providing a plurality of terminal devices interfaced to said downstream channels for receiving information on said channels, and formatting said information for display on a display device, each said terminal device including a tuner for receiving and selecting said downstream channels, and a terminal processor for receiving information requests from a user, and instructing said tuner to select one of said downstream channels;

d) receiving a request for information in said terminal device from an input device;

e) identifying a one of said downstream channels on which said information is to be transmitted;

f) causing said tuner to select said one of said downstream channels; and

g) receiving said requested information with said terminal device.

22. The method of claim 21, wherein said terminal device further includes a memory containing a channel mapping database for identifying, for each of a plurality of possible information requests received from a user, a one of said channels on which said requested information is being transmitted from said headend, and said step of identifying a one of said downstream channels on which said information is to be transmitted comprises accessing said channel mapping database to identify said channel from said information request.

23. The method of claim 22, wherein said terminal processor further identifies from said channel mapping database, a time at which said requested information is to be transmitted on said one of said downstream channels, and said step of causing said tuner to select said one of

said downstream channels, further comprises causing said tuner to select said one of said downstream channels at said time.

24. The method of claim 21, further comprising the step of:

h) storing said requested information in a memory in said terminal device.

25. The method of claim 24, further comprising the steps of:

i) after said requested information is stored in said memory, causing said tuner to select a second of said channels to which said tuner was tuned when said information request was received by said terminal processor, said second of said channels transmitting a second information stream;

j) formatting said requested information and said second information stream into a combined picture-in-picture image data stream; and

k) supplying said image data stream to a display device.

26. The method of claim 21, further comprising the steps of encoding information in said headend to be broadcast to form a plurality of encoded data streams, said encoding including periodic generation of a full image frame, and decoding said encoded data streams in said terminal device.

27. The method of claim 21, wherein said requested information comprises Internet web page data, said web page having content that is related to a video program that is being received by said tuner at a time that said information request is received by said terminal processor.

28. The method of claim 21, wherein the step further of receiving a request for information in said terminal device from an input device, further includes entering said request either through actuation of a button on said input device, or selection of an on-screen button displayed on a video image.

29. A terminal device for receiving multiple information streams and forming a picture-in-picture image information stream therefrom comprising:

- 1) a tuner for receiving and selecting a plurality of channels, each of said channels transmitting one or more information streams;
- 2) a terminal processor for instructing said tuner to select one of said downstream channels;
- 3) a memory for storing information received on said downstream channels; and
- 4) a display manager having a picture-picture graphics application for retrieving information stored in said memory, and combining it with an information stream that is being received by said tuner on one of said downstream channels to form a picture-in-picture image data stream for simultaneous display of said stored information and said information stream on a display device interfaced to said terminal device.

30. A method for receiving multiple information streams and forming a picture-in-picture image data stream therefrom comprising the steps of:

- a) providing a terminal device having a tuner for receiving and selecting a plurality of channels, each of said channels transmitting one or more information streams;

- b) receiving a first information stream on one of said channels;
- c) storing said first information stream in a memory in said terminal device;
- d) receiving a second information stream on one of said channels;
- e) combining said first information stream with said second information in a picture-in-

5 picture format to form a combined image data stream; and

- f) supplying said combined image information stream to a display device for simultaneous display of images corresponding to said first and second information streams.

31. A network headend for accessing information from one or more sources, and broadcasting said information over a television distribution network, said headend comprising:

- a) at least one scaler for receiving a first image generating information stream and generating a scaled version of said first information stream having a reduced image size; and

- b) at least one multiplexer for combining said scaled version with a second image generating information stream to form a combined information stream, said combined information stream being formatted in a picture-in-picture format where a first image generated by said first image generating information stream is overlaid on a second image generated by said second image generating information stream.

32. The headend of claim 31, further including an encoder for encoding said scaled version prior to being combined with said second information stream.

33. The headend of claim 31, wherein said first information stream is a video program, and said second information stream is selected from the group comprising an Internet web page, a television program guide and user account information.

5 34. The headend of claim 33, wherein said second information stream comprises an Internet web page that is related to a program content of said video program.

35. A method for transmitting multiple information streams in a networked distribution system comprising the steps of:

- 10 a) providing a first image generating information stream;
- b) scaling said information stream to form a reduced size image generating information stream;
- c) combining said reduced size image information stream with a second image information stream in a picture-in-picture format to form a combined image information stream;
- 15 and
- d) transmitting said combined image information stream through a distribution network.

36. The method of claim 35, wherein the steps of scaling and combining are carried out in response to a request received from a terminal device for said second information stream, and

20 said step of transmitting further comprises transmitting said combined image information stream to said terminal device.

37. The method of claim 35, wherein said first information stream is a video program,
and said second information stream is selected from the group comprising an Internet web page,
a television program guide and user account information.

5 38. The method of claim 37, wherein said second information stream comprises an
Internet web page that is related to a program content of said video program.